Controller DULCOMETER diaLog DACb

Water parameter analysis made easy – with the DULCOMETER diaLog DACb

Do you wish for a simple controller for water analysis? One that is easy to operate and with which you can freely select between all common measured variables per channel? There is one: our all-rounder DULCOMETER diaLog DACb. What is more, it is Ethernet-/LAN-capable and can be ideally integrated into existing networks.

Technical Details

- Measured variables: pH, ORP, chlorine, chlorine dioxide, chlorite, bromine, conductivity, peracetic acid, hydrogen peroxide, ozone, dissolved oxygen and fluoride
- Installation, degree of protection: Combination housing (wall mounting, control panel mounting, pillar assembly) IP 67 and IP 66
- Control: three measuring and control channels, each with independent mono-directional PID controller (optional: two bidirectional PID controllers)
- 24*V DC protective low voltage supply e.g. by means of solar system or in the wet area of waterworks
- Temperature compensation for pH and for chlorine dioxide process sensor CDP, pH compensation for chlorine
- Digital inputs for the processing of control signals, e.g. of sample water limit contacts, remote stop control and to monitor the liquid levels in chemical storage tanks
- Control outputs for electronically controlled metering pumps and solenoid valves
- Interference variable processing: simple control of water parameters in flowing water by processing the flow in the control algorithm
- Adaptation of the controller setpoint to changed process conditions is possible via remote control by means of the mA signal of a PLC or with more stringent requirements via the field bus option

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Technical Data

Measured variables and measuring ranges	**mV connection type:** pH: 0.00 ... 14.00 ORP voltage: -1500 ... +1500 mV **Connection type mA (amperometric measured variables, measuring ranges corresponding to the sensors):** Chlorine Chlorine dioxide Chlorite Bromine Ozone Hydrogen peroxide (PER sensor) Hydrogen peroxide (PEROX sensor with **PEROX transducer V2 Order No. 1047979**) Peracetic acid Dissolved oxygen **Connection type mA (potentiometer measured variables, measuring ranges corresponding to the transmitter):** pH ORP voltage **Fluoride:** via module VA and function extension package 3 and 4 Conductivity mA via sensor CCT 1-mA-20 mS/cm **Temperature:** via Pt 100/Pt 1000, measuring range 0 ... 150 °C
Resolution	pH: 0.01 ORP voltage: 1 mV Temperature: 0.1 °C Amperometric analysis (chlorine etc.): 0.001/0.01 ppm, 0.01 vol.%, 0.1 vol.%
Accuracy	0.3% based on the full-scale reading
Measurement input	pH/ORP (input resistance > 0.5 x 10^{12} Ω)
Temperature compensation	Pt 100/Pt 1000 for pH, chlorine dioxide (CDP) sensor and fluoride
Correction range	0 … 100 °C
pH compensation range for chlorine	Sensor CLE 3 and CLE 3.1: 6.5 ... 8.5, sensor CBR: 6.5 ... 9.5
Disturbance signals	Flow via 0/4 … 20 mA signal or contact water meter, 1 - 500 Hz. The multiplicative interference variable can influence all channels, while the additive interference variable only influences one channel.
Control characteristic	P/PID control
Control	2 or 3 bidirectional controls
Analogue outputs	2 (3) x 0/4 ... 20 mA electrically isolated, max. load 450 Ω, range and assignment (measured, correction, control variable) can be set
Control outputs	2 (4) pulse frequency outputs for the control of metering pumps 2 relays (limit value or pulse length control)
Alarm relay	250 V ~3 A, 700 VA contact type changeover contact
Digital control inputs	4 (7) as a remote control input for the functions pause control / sample water fault, parameter set switch-over, level monitoring of chemical tanks
Electrical connection	100 – 230 V, 50/60 Hz, 25 VA, 24 V DC
Field bus connection	PROFIBUS® -DP, Modbus RTU, PROFINET
Ambient temperature	0 ... 50°C (for use indoors or with a protective enclosure)
Enclosure rating	Wall-mounted: IP 66 and IP 67 (NEMA 4X) Installation in the control cabinet: IP 54 for control cabinet door
Tests and approvals	CE, MET (corresponding to UL according to IEC 61010)
Housing material	250 x 220 x 122 mm (WxHxD)
Dimensions	250 x 220 x 122 mm (WxHxD)
Weight	1.3 kg

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Standard equipment with basic measured variable

- PID controller with pulse frequency-based metering pump control for 2 metering pumps.
- 2 analogue outputs for measured value, correction value or control variable (depending on the optional equipment).
- 4 digital inputs for sample water fault detection, level switch, pause and parameter switch-over.
- 2 output relays selectable as limit value, cycle timer, real-time timer or intermittent programmable control output (depending on the optional equipment).
- Measured variables and language selection during commissioning.
- Temperature compensation of the pH, chlorine dioxide (CDP) and fluoride measurement via Pt100/Pt1000.
- 24 operating languages: all European languages as well as Chinese, Russian, Thai, Korean. The operating language is selected during commissioning and can be changed at any time by a keyboard shortcut. The documentation language is selected via the identity code. A data carrier is also supplied that contains all other languages.
- Device parametrisation is saved and transferred on an SD card.
- Calibration and event data logger (without SD card, data is saved in the controller).
- Interference variable processing (flow) via frequency (contact water meter).
- Subsequent upgrade of the software function by means of an activation key or firmware update.

Description of the possible measured variables as basic measured variables:

Module VA mV/temperature + mA sensor input:

- 1 sensor input for pH or ORP sensor and temperature sensor Pt100/Pt1000
- 1 sensor input for the connection of, for example, chlorine sensors, such as CBR or pH switch-over pHV1 and fluoride including interference variable or pH compensation for chlorine.

Module AA mA/mA sensor input:

- 2 sensor inputs for the connection of, for example, chlorine sensors, such as CBR or pH switch-over pHV1, including interference variable or pH compensation for chlorine.

Module VV mV/mV temperature sensor input:

- 2 sensor inputs for the connection of pH and ORP sensors and temperature sensors Pt100/Pt1000, e.g. of type PHER, RHER, PHEI, RHEIC, Pt100SE

Module L3 Conductivity temperature sensor input:

- 2 sensor inputs for the connection of conductive conductivity sensors and temperature sensors Pt100/Pt1000, e.g. of type LFT, LMP

Optional equipment for third measuring channel pH

Package 2

- Third measuring and control variable pH via mV or mA with or pH compensation for chlorine without external setpoint specification via analogue signal for channel 1 without interference variable flow via mA for channel 1
- Third analogue output.
- Control two additional metering pumps.

Package 3

- Third complete measuring and control channel, any measured variable, with PID controller.
- Third analogue output for measured value, correction value or control variable (depending on the optional equipment).
- Three additional digital inputs, e.g. for level monitoring, pause and sample water alarm for channel 2.
- Temperature compensation of the pH, chlorine dioxide (CDP) and fluoride measurement.

Package 4

- Combination of packages 2 and 3 (only one channel for amperometric sensors is available with the interference variable mA).

Communication options

- Measurement data logger with SD card.
- Visualisation of the measured data using a web server via LAN and PC/tablet PC and web browser.
- PROFIBUS® DP, Profinet and Modbus RTU.

Hardware extension

- Protective RC circuit for output relay: Protects the output relay if inductive loads are to be switched (e.g. solenoid valves or motors). Not with 24 V DC electrical connector.

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